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THE CURE OF SQUINT.*

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I. THE ÆTIOLOGY OF SQUINT.

SQUINT is the disorganisation of the mechanism which works the two eyes together, there is with its onset a loss of that most perfect and valuable of all the functions of the human eyes—binocular or stereoscopic vision.

In this paper it is proposed to limit attention to the most frequent form of squint, definite disassociation of the eyes, and as it appears in children. This type accounts for by far the greater number of cases. There are other and most interesting varieties of squint, due to disease, to accident, and the latent squints, but to include these in the present paper would be to limit the space due to the more frequent and therefore the more important forms.

Incidence.

The frequency with which squint appears in children can best be judged by examining the scholars of any large school. In one good class London school of 1007 children there were no less than 18

* A paper read before the West London Medico-Chirurgical Society.

squinters ; amongst 374 infants there were 7, 4 girls and 3 boys ; amongst 363 girls there were 7, and 370 boys accounted for 4. The incidence is therefore close on 2 per cent., and girls are affected nearly twice as frequently as boys. The figures of the Belgrave Hospital for Children show how large a proportion of squinters there are amongst those brought on account of some difficulty with their eyes other than external disease. Amongst 1400 children examined because "they could not see properly" no less than 199 were squinters, indeed all the younger children were squinters :

Age (years)	4	5	6	7	8	9	10	11	12	13	14
Per cent.	100	100	63·2	32	7·6	17·7	5·5	5·2	7·5	2·7	5·4

Amongst these 199 cases the great majority were of the fixed type, with one eye turned towards the nose, all but 9 were primary squints, *i. e.*, not associated with actual disease of the eye. The figures are as follows :

Convergent, fixed	.	.	.	.	.	.	166
„ alternating	.	.	.	.	.	.	16
„ with scarred cornea	.	.	.	.	.	.	6
„ with disease of fundus	.	.	.	.	.	.	1
„ congenital defect	.	.	.	.	.	.	1
„ brain disease	.	.	.	.	.	.	1
Divergent	.	.	.	.	.	.	8

Æsthetics.

The ugliness of squint is patent. It is probable that the "evil eye," for which many hapless old women were harried to their death on the suspicion of witch-craft in "the good old days," was no more than a common squint, a "cast" in the eye, or "bossing," as it is called in many parts of the country to this day. And bossing had an evil significance ; of persons it indicated a despicable and worthless character, usually of decrepid age. "I speak to you, auld Bossis, of perdition," Lyndsay, 'Works' (ed. 1592). Not only was squint thought to be of evil significance, but the defect itself was considered the work of evil spirits. In "King Lear" we find the following in the scene on the heath at night : "This is the foul fiend Flibbertigibbet : he begins at curfew, and walks till the first cock ; he gives the web and the pin, squints the eye, and makes the hare-lip ; mildews the white wheat, and hurts the poor creature of the earth."

In nearer times than those in which Shakespeare wrote a squint

has been the cause of slanderous accusations against quite harmless individuals; in rural districts the squinter has been proverbially a thief, somewhat after the kind of "Taffy" in the children rhyme. There is even something of this feeling still existent to-day, and in more than one case the man in business has desired to have the deformity of squint corrected by operation, "because he found that the people with whom he had dealings seemed to doubt his probity when they noticed the squint!"

Evolution.

In its essence squint is a falling back into a lower state of organisation, so far as the eyes are concerned. Instead of the "eyes right" direct look of the man we get the irregular fixation of the eyes normal to the lower animals. Monocular vision is the normal condition of the lower vertebrates. Who has not seen the movements of the eye of the chameleon? One eye of the creature has been awake when the other has been covered as if asleep, or one has looked forwards whilst the other seemed to look backwards. But that obvious absence of association of the two eyes is no more remarkable than the regular lateral position of the eyes in fishes. Their eyes can by no means work together for they are set on the opposite sides of the head. When we examine the anatomy of the nerves of the fish we find that there are two distinct optic nerves that run quite independently to the two sides of the brain, and there is no connection between them. It is quite otherwise with the eye-nerves of man, the two great eye-nerves meet inside the skull, and join in such a fashion that half the nerve of one eye unites with the corresponding half of the nerve of the other eye; so that the brain receives the joint impression of the two images the eyes have gained of the one object looked at. In fishes a complex arrangement would be of no use, their eyes are more in the nature of alarums than organs of perception, for they have other senses wherewith to find their food and detect their foes.

The same holds good of the lower mammalia, *e. g.*, the rabbits. In these animals so fine a faculty as binocular vision would be wasted, their visual perception is practically limited to moving objects. At the least sign of movement in the surrounding objects they are alert and run; whereas if a man will remain quite motionless the rabbits will go on feeding all unconscious of his near presence, provided the wind be in a favourable direction.

There appears to be some attempt at two-eyed vision in the higher

hunting mammalia. The domestic cat seems to have some such power, for it is noticeable that the eyes work together in examining near objects, and that a cat is able to "handle" an object with great nicety, much more so than can the dog. With this development of the eyes in hunting animals there is a large increase in the area on the surface of the brain where is the active grey matter which belongs to the sense of sight. This area is small in the hunted animals, but large in the hunting animals.

In man the development is complete. The whole of his face and the position of his body has been remodelled to secure this great object. Man stands erect to the view; the face is flattened so that the eyes may come well to the front, in which position alone they can work together; the obstructing snout has gone, and with it some of the keen sense of smell that belongs to the lower animals. Man's eyes now work on parallel axes, and they can be turned in towards each other so as jointly to examine near objects. There is now constant association of the two eyes, and this gives binocular vision, and with that the ability to determine the size, the bulk, and the distance of any object. This judgment is effected by an unconscious, but trained, perception of the nerve impulses required by the muscles of the eyeballs in moving the eyes from one position to the other as a man looks first at one and then at another object. Binocular vision is something that the unfortunate person who has not the faculty cannot understand; he therefore cannot be brought to realise what is missed. It is something like colour vision; to the normal person red is a glorious colour, to the colour-blind it is no more than drab, and no power can enable such a person to understand the raptures of the artistic over fine colour effects, so it is with tone-deafness.

With the growth of this power of the eyes, there has been a corresponding development of the brain in the area where the visual centres are situated. In man these occupy an enormous area as compared with the hunted animals, and even when compared with the areas of the hunting animals. Man is, therefore, easily first as the "mighty hunter before the Lord." If it were not for this great cerebral development there never could have been that association of hand and eye that make the artificer, the artist, and the musician.

Control.

The brain is the real factor in the production and maintenance of binocular vision. It is the brain that keeps the eye in control.

This control goes by the name of the "fusion faculty"; the term indicates the power of the brain to fuse into one satisfactory picture the two divers images seen by the two eyes. If we think for a moment it will be obvious that when we look at a given object the two eyes do not see exactly the same view, for they are differently related in point of space to each other. The right eye is somewhat to the right and therefore gets a better view of the right side of things, the left eye is situated rather to the left and gets a better view of the left side of things. The width between the two eyes is not great, no more than four inches in the most widely-set eyes, but that little difference makes all the difference to the impression that is received by the eyes. The two slightly divers retinal pictures are transmitted to the brain, the cells of the grey matter of the brain fuse them together or overlap the two impressions so that they become one, and the slight difference of the two impressions gives all that feeling of solidity that we perceive in the view, whether it be of trees, of statuary, or of persons.

Binocular vision is not present at birth. It comes into play about the third or fourth week of life; but then it is weak and tottering, and just as uncertain as a child beginning to walk. A very little irritation, even a pin-prick, will cause the eyes to squint. Pain, the convulsions of indigestion, the irritation of worms, all will upset the brain control.

The observation of the ease with which squint may be induced is very old. Bacon writes: "Some can squint when they will, and children set upon a table with a candle behind them, both eyes will move outwards, to seek the light, and so induce squinting." A very similar warning is to be heard even nowadays in many nurseries; the elder children are forbidden to look at the baby from over the head of the cradle, lest the baby in trying to see them should develop a squint. There is even more interesting observation in the famous diary of Pepys. He writes: "At supper the three doctors of physic again in my cabin, when I put Dr. Scarborough in mind of what I heard him say: that children do, in every day's experience, look several ways with both eyes, till custom teaches them otherwise; and that we do now see but with one eye, our eyes looking in parallel lines."

Once binocular vision is established it is rarely disturbed, but should the control of the brain be weak, a very little ocular or physical disturbance will cause a squint to appear.

The state of the case may be illustrated by a simile. The relation between the two eyes, the muscles of the eyes, the nerves that

stimulate the muscles, and the brain that controls the nerves, is very like that between the horses, the traces, the reins, and the driver of a four-in-hand. A good driver will master a bad team. If the driver be bad, even though the team be perfectly matched and the equipment all that could be desired, the fool of a driver will surely run the coach into the ditch at the first bad turn in the road. So with the eyes. There may be an ill-matched pair of eyes, there may be even a muscle defect, but if there be perfect brain control there will be no squint, though there will certainly be all the symptoms of eye-strain. On the other hand, there may be a perfectly matched pair of eyes, and with a muscle equipment that is perfect, yet if there be an imperfect brain control, then at the least difficulty there will be an "overturning of the coach"—the eyes will squint. If the baby be young a pin-prick or the worms will do it. When it is older a mild fever will do it. When it goes to school the first turn of close work will do it. Each of these things are debited with the disaster, but really the fault was with the brain. This is an extreme case; there are some such but happily not many. For the most part squints appear in those who have an error of refraction; there is some brain control, but it is not strong enough to keep the eyes together when the circumstances are adverse. When there is the pin-prick, or the worms, or the fever, or the lessons at school, then the added strain thrown on the brain makes the work too much; it ceases to control the unequal eyes, so that one squints. Squinters rarely or never complain of eye-strain when the squint is established; they have given up the struggle!

Effects of Squint.

It is obvious from the foregoing that it is very important to check the squint at its very onset, for it means the cessation of a very important piece of brain-work, one that has taken eons of time to weld into the brain fibre of man, and the loss of which is something that cannot be measured in vulgar fractions.

There is, however, another reason for dealing with a squint at the earliest possible date. When an eye is turned so that it continually looks in a different direction to the other, the sight of the turned or squinting eye is lost. The eye sees nothing. That this should be so is an obvious necessity. If it were otherwise the child would be for ever seeing two objects—two steps, two doors—and the confusion would be distressing, and possibly endanger its life. With a child the connection of the nerves of sight are so lightly joined that the

double vision produced by squint may be lost in an hour or so ; indeed it is rare to hear of any record of such a difficulty from the parents or nurses of these children, except when the squint is of sudden onset, as in the case of accident, falls, and the like.

If a squint be neglected the squinting eye may become completely blind for all the finer purposes of the eye. It will no longer be able to see letters or recognise faces ; it may even lose the power of fixation. Such a change as this in an eye means the loss of an eye to all intent and purposes, and it is a serious thing to begin life with such a handicap. It is a handicap that makes it impossible for the child in later years to enter most of the public services.

Popular Fallacies.

There is a popular idea that children "grow out of squint." There is some truth in this idea. Many a very young child has been seen to squint when it is ill. Irritation may make it squint, but when the irritation is withdrawn the squint will disappear. These are temporary cases. Then there are children who grow up with a squint, and when they are well on through their teens, at the time of puberty, the eyes of a few of them will get straighter, or almost straight, and the squint will be noticed to be bad only when they are tired and in the evening. The temporary squint of the infant does no harm. But then it is a warning that there may exist a weak brain control of the eyes, and a hint to be watchful when the child goes to school or is attacked by fever. The case of the children who grow up with squint is very different. Even though their eyes should come straight they never recover the effects of the squint. They have lost their precious faculty of binocular vision, and the sight of the eye that was crossed is gone for all practical purposes ; it is reduced to the level of a rabbit's eye ; it has a field of vision, but no macula, and no fine visual acuity.

Heredity.

In some cases of squint there is a strong hereditary factor. The disorder may have existed in many generations of one family. The squint itself is not inherited, only the conditions that favour its onset. In some rare cases, however, the squint is associated with definite failure of development of certain muscles of the eye through several generations ; in these cases it may be said that there is a true inheritance of squint.

(To be continued.)

OBSERVATIONS ON ELEVEN CASES OF CEREBRO-SPINAL FEVER.

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DURING the outbreak of cerebro-spinal fever which occurred in Bristol during the last quarter of 1914 and the first six months of 1915, eleven cases were admitted into the Bristol Children's Hospital, in all of which the diagnosis was confirmed bacteriologically after lumbar puncture. Of the eleven cases admitted, seven made a good recovery and four died. The cases varied very much in the intensity of their nervous symptoms; in only three (Cases 3, 4, 7) were they, prior to admission, sufficiently pronounced to arouse the suspicion of meningitis; in two (Cases 1 and 9) a diagnosis of rheumatism was made, whereas one child (Case 10) was sent in as a suspected case of ptomaine poisoning. Vomiting and constipation was the diagnosis in two others (Cases 2 and 11). One infant (Case 5), admitted for diarrhœa and vomiting, developed broncho-pneumonia and later cerebro-spinal fever; one boy (Case 6) was sent in as pneumonia, and one (Case 8) was sent in undiagnosed. In Case 1 it was not for two or three weeks after admission that a slight Kernig's sign first suggested the advisability of lumbar puncture and an examination of the cerebro-spinal fluid. The symptoms up to that time suggested some unknown source of infection, examination of blood, urine, and fæces failing to give any clue as to the nature of the disease. The case was in fact a good example of the mild septicæmic variety of the disease, in which the nervous symptoms were in abeyance, and emphasises the great necessity for a thorough routine examination of all the various systems, if you are not going to be led astray.

Nervous system.—Headache and vomiting were present in practically all these cases to a greater or less extent, but soon passed off in those which got well, only persisting in the unfavourable cases. Persistent head retraction or retraction occurring during the later stages of the disease, was an unfavourable sign. The knee-jerks were variable, in some cases they were actually exaggerated, in others they were absent, but tended to return as the patient got better. The absence of the abdominal reflex occurred only in the worst cases (it was absent in all the fatal cases). The loss of this reflex indicated that there was probably a meningo-myelitis of the lower dorsal segments of the cord; Kernig's sign was present in every one of the cases. Optic neuritis was present in five cases; in

one of the fatal cases it went on to complete atrophy. Irritability was marked in the more serious cases, the children lying curled up in bed, objecting to being moved or having anything done for them. They appeared to experience pain, and were very sensitive of any cold or draughts. This condition was probably due to inflammation of the nerve roots of the spinal nerves; at the autopsy on one of the fatal cases pus was observed tracking inside the sheath of the intercostal nerves. Insomnia was another troublesome symptom in the severe cases. Two cases, girls (Cases 3 and 11), were wildly delirious at times; one recovered, the other died. In the fatal cases, spasticity and tetany were marked towards the end, and in one of them (Case 7) there was retention of urine. Post mortem there were marked inflammation of the meninges and pus over the lumbar enlargement of the cord.

Cerebro-spinal fluid.—The fluid was in all cases more or less turbid; in some cases it was greenish-yellow in colour. It has been our experience that, in the cases which tended to recover, the fluid was generally under pressure. The fluid contained no reducing agent. In certain unfavourable cases the fluid showed a tendency to clot, thus rendering its removal almost impossible.

Microscopically, the predominant cell was the polymorphonuclear; in the milder cases these cells were well preserved, and consequently the organisms were mainly intra-cellular; whereas in the more severe cases many of the cells had a tendency to burst, and consequently the organisms were more extra-cellular. In the cases which recovered, the cerebro-spinal fluid, after two or three injections of serum, became much clearer, the cells were fewer and better preserved, and the organisms also were fewer and more inclined to be intra-cellular. There were certain stages, both in mild and severe cases, of infection, where the mononuclears might equal, or even exceed, the polynuclears in a film. Endothelial cells were common in cases of mild infection.

Eye symptoms.—Irido-cyclitis was well marked in two cases, one of which (Case 1) recovered. My colleague, Mr. Arthur Fells, who kindly undertook the treatment of the eye condition, reports: "When I first saw the child she was suffering from a subacute irido-cyclitis; the conjunctival injection subsided, and about a week later, when the pupil was fully under atropine—a condition that was only slowly brought about—a large mass of white fluffy exudate was seen lying in the vitreous just behind the lens on the nasal side. It was easily visible to ordinary inspection, without the use of oblique illumination or ophthalmoscope. Vision was reduced to P.L. The

No.	Sex.	Age.	In hospital.	Outside diagnosis.	Nervous symptoms.	Rash.	Cerebro-spinal fluid.	Result.
1	F.	11 yrs.	Nov. the 13th, '14, to Feb. the 9th, '15	? Rheumatism	Headache; vomiting; eye symptoms; later, Kernig	None	Slight turbidity; few organisms; cells well preserved; organisms present	Recovered.
2	M.	2½ yrs.	Jan. the 21st to Feb. the 19th, '15	Mother brought child up for constipation, condition diagnosed on admission	Vomiting; Kernig; no knee-jerks; no abdominal reflex; later, tremor, rigidity, coma; discs blurred	Slight erythematous rash, face, chest, and arm	Thick; a general tendency to clot; organisms present	Died.
3	F.	11 yrs.	Jan. the 31st to Feb. the 17th, '15	Meningitis (unspecified)	Rigor; vomiting; head retraction; knee-jerks +; no abdominal reflex; limbs rigid; insomnia; delirium; right disc not seen; no red reflex; left disc more and more blurred; definite optic neuritis	Hæmorrhagic	Turbid, not under pressure, became more and more difficult to puncture; few organisms found	Died, cardiac failure.
4	M.	9 yrs.	Feb. the 4th to March the 6th, '15	Tuberculous meningitis	Head retraction; delirium; vomiting during first 24 hours; knee-jerks present; abdominal reflex present; Kernig; rapid disappearance of nervous symptoms; optic neuritis, which soon cleared up	None	Turbid, soon cleared up; organisms present	Recovered.
5	F.	9 mths.	Feb. the 8th to March the 7th, '15	Diarrhoea and vomiting	Feb. the 25th.—Vomiting and green stools; head retraction; squint; Kernig; rigidity; wasting	"	Turbid; under pressure; slightly greenish; organisms present	Died.

6	M.	9 yrs.	March the 6th to April the 7th, '15	Pneumonia	Vomiting; headache; slight retraction of head; abdominal reflex present; Kernig; knee- jerks absent, but slowly re- turned; slight optic neuritis	"	Slight turbid, soon cleared up, and under pressure; organisms	Recovered.
7	M.	3 yrs.	March the 11th to May the 18th, '15	Meningitis	Headache; delirium; vomiting; no knee-jerks; no abdominal reflex; Kernig; later, convul- sions, tetany, optic neuritis, passing to atrophy.	Later petechiae over abdomen	Turbid; under pres- sure; great ten- dency to clot; punc- tured high at end; meningococci pre- sent	Died.
8	M.	2 yrs.	March the 18th to May the 21st, '15	—	Very irritable; marked head retraction; no abdominal re- flex; no knee-jerks, present later; Kernig	None	Thick greenish fluid; under pressure; or- ganisms	Recovered.
9	M.	7 yrs.	Apr. the 3rd, '14, to June the 29th, '15	Rheumatism	Vomiting; epistaxis; abdo- minal reflex present; knee- jerks absent; Kernig	"	Turbid; under pres- sure; organisms	"
10	M.	2½ yrs.	May the 28th to July the 8th, '15	? Ptomaine poisoning	Headache; head retraction; squint; abdominal reflex pre- sent; Kernig	Purple spots on legs	Do.	"
11	F.	9 yrs.	June the 7th to July the 19th, '15	Vomiting	Headache; vomiting; retrac- tion; delirious; knee-jerks present + +; pupils sluggish; abdominal reflex present	None	Turbid; under pres- sure; meningococci present	"

mass of exudate slowly absorbed till no trace of it could be seen, and vision steadily improved till the child could read type equivalent to J. 8. As regards treatment, the eye was kept under the influence of atropine and pot. iod. was given; but it was after the administration of anti-meningococcus serum that the improvement in the eye took place. No local injections were given; but I have no doubt but that the improvement in the eye was due to the serum." I regret that the eye from the fatal case was lost before an examination could be made by a skilled pathologist. The condition, however, seemed to be a much more acute variety of the case recorded above.

Rashes.—In all the severer cases the child was collapsed and often cyanosed on admission, but in only four cases (three of them fatal) was there a definite rash; one (Case 2), on admission, had a hæmorrhagic rash on trunk and limbs, most marked on the latter. One boy (Case 10), who recovered, had purple spots on legs only. Of the two other fatal cases, one had a marked erythematous rash on the face, chest, and upper part of the arms, but none elsewhere; the other case developed marked mottling and petechiæ during the latter part of his illness.

Treatment.—Lumbar puncture alone is of great therapeutic value, as it tends to decrease intracranial pressure, and so relieves headache, diminishes head retraction, and induces sleep; in fact, in cases of bad insomnia it is better to do lumbar puncture late at night. The quantity of fluid removed must be determined by the condition of the child; but under no circumstances is it wise to remove more than 30 c.c. at a time, as dyspnœa and irregularity of the pulse may arise. Lumbar puncture was performed without an anæsthetic, except on three occasions, when, owing to the patient's delirium, it was necessary to administer an anæsthetic. The anæsthetic employed was a mixture of ether and chloroform. It was noticed that the children were more collapsed after puncture under anæsthesia. The quantity of serum injected should be less than the quantity of fluid withdrawn. In the case of children it is not usually desirable to inject more than 10 c.c. at a time. In acute cases puncture may be performed daily, or even twice daily. Serum, however, even in acute cases, should not be injected more than once daily. As the general condition of the child begins to improve, puncture should be performed and serum injected at longer intervals, and when the fluid is clear and free of cells should be omitted altogether. In those cases where removal of fluid, owing to its tendency to clot, has been difficult, puncture has been done higher than usual; in one of the fatal cases it was performed nearly at the

level of the angle of the scapula, without doing any damage to the cord, as was shown post mortem. In these cases where the fluid tends to clot, washing out the spinal canal with normal saline solution has been of no avail; neither has the administration of sodium citrate internally done any good. In two of the convalescent cases serum rashes occurred. No other phenomena attributable to the serum were observed. The remaining treatment of the disease consists in good nursing and getting the patient to take plenty of nourishment. As a matter of routine, I have given hexamethylene tetramine gr. v in a pint of water daily. Of other drugs, opium in the form of nepenthe is often of great use. I have tried the hypodermic injection of soamin, but have observed no good results from its use. Dr. Nierenstein, of Bristol University, believes that soamin does not penetrate into the cerebro-spinal fluid. He therefore imagines that the beneficial effects which have been noticed might be due to stimulation of metabolism, especially as there is no evidence that organic arsenic compounds have any effect on bacteria. In cases which respond well to treatment, in addition to the loss of turbidity in the cerebro-spinal fluid, there is a gradual fall in temperature to the normal, and also a marked improvement in appetite and a rapid increase in weight; whereas in the fatal cases there is an irregular temperature, which often registers a high level before death, and there is also marked emaciation. As a public health precaution, the M.O.H. required that no convalescent be discharged until two swabs, taken at intervals, from the nasopharynx were found on culture to be free from organisms.

I wish to record my indebtedness to Dr. Naomi Tribe and Dr. Esther Harding for the unremitting attention they bestowed on the cases and the care with which they kept the records.

THE CURE OF SUPPURATIVE MENINGOCOCCAL IRIDO-CHOROIDITIS BY INJECTIONS OF ANTI-MENINGOCOCCAL SERUM INTO THE VITREOUS.*

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Suppurative irido-choroiditis is a complication of cerebro-spinal meningitis associated with the development of the meningococcus in the internal membranes of the eye. Its frequency varies in different epidemics. It has been relatively rare in the present epidemic,

* A paper read before the Société di Biologie, Paris, on March the 6th, 1915.

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in which I have found only three cases among several hundred patients.

The prognosis is very unfavourable. Within four or five days it almost invariably ends in suppuration and atrophy of the eye with loss of vision. Anti-meningococcal serum treatment has probably reduced the frequency of this complication, but has not diminished its gravity.

One of the writers who have observed the largest number of cases of meningitis and make the best use of serum, Ernest Levy, of Essen, has had nine cases of irido-choroiditis, eight of which were unilateral, among 165 patients under his care. Of the nine children only one retained his vision, though it was extremely impaired. "The child could just perceive the movements of the hand." In the remaining eight cases the blindness of the affected eye was absolute, although the number of injections had never been less than four, and in several cases had been as many as seven. The total amount of serum varied from 58 to 200 c.c.

The resistance of meningococcal irido-choroiditis to intra-spinal serum treatment should not surprise us. It is due to the same causes which are responsible for the failure of anti-meningococcal serum when injected subcutaneously in cerebro-spinal meningitis. Like the arachnoid cavity, the internal media of the eye, which present by the way the greatest anatomical resemblance to it, are almost completely independent of the general circulation.

Various substances introduced into the blood do not make their way into either cavity, or only in insignificant amounts. (Paul Römer, Salus, and others have proved that anti-bodies—agglutinins, precipitins, hæmolysins, bacteriolysins, and opsonins—are retained by the ciliary epithelium, and either do not pass at all or only in quite insufficient amount into the vitreous and aqueous humours. The inflammation of the membranes of the eye does not appreciably reduce this faculty of retention, as is proved by the inefficacy of intra-spinal injections of serum.) We have, therefore, been led to think that if to cure cerebro-spinal meningitis it is necessary to inject serum into the spinal cavity, *meningococcal irido-choroiditis should be treated by the intra-ocular injection of serum.* This I have done on two occasions in children—the first time in February, 1914, with the collaboration of Dr. Rochon-Duvigneaud; the second time in February, 1915, with Dr. Valude. The history of these two cases will be reported elsewhere in greater detail.

The following is a brief *résumé*: The first patient, a girl, aged 6 years, was suffering from severe cerebro-spinal meningitis compli-

cated by suppurative arthritis of the left elbow and right knee. When Dr. Rochon-Duvigneaud operated, the anterior chamber of the right eye was more than half filled by an hypopyon. The operation consisted in the injection of several drops of Dopter's serum into the vitreous and in a puncture of the anterior chamber, which did not, however, withdraw sufficient fluid for microscopical examination. The results were very satisfactory. The aqueous humour rapidly resumed its transparency, the iris regained its natural colour, and vision was recovered. A year later the child could clearly see every detail with the right eye. She only presents an immobility of the pupil as the result of synechiæ. The suppurative arthritis of the elbow and knee, which were also treated with local injections of serum, cleared up very quickly, and the joints are at the present moment perfectly normal.

The second patient, a boy, aged $2\frac{1}{2}$ years, was admitted on the fifth day of severe cerebro-spinal meningitis. On the following day he presented injection of the left conjunctiva. This injection was much more marked the following day, and was accompanied by palpebral spasm. A closer examination showed a lateral hypopyon (the child was lying on the right side) and a yellow film filling the pupillary area and situated in front of the lens. Dr. Valude punctured the anterior chamber and enabled us to collect a little pus, which contained quantities of intra- and extra-cellular meningococci. He then injected 1 c.c. of serum into the vitreous. The results of the operation were most satisfactory. We very soon witnessed the detachment and progressive absorption of the exudation in front of the lens. The conjunctiva resumed its natural colour. The photophobia disappeared and the child could see clearly. The iris resumed its natural colour and reacted to atropine, and recovery will doubtless be complete.

The operation was earlier than in our first case and the dose of serum was decidedly larger.

These two cases prove that the direct introduction of anti-meningococcal serum into the eye can cure suppurative meningococcal irido-choroiditis, which would otherwise result in blindness.

We have grounds for believing that such an operation has not been previously attempted. We will only mention that our collaborator, Dr. Debré, with M. Jean Paraf, reported some experiments before this Society on December the 6th, 1913, to prove the possibility of curing experimental gonococcal ophthalmia in the rabbit by injecting anti-gonococcal serum into the anterior chamber. These gentlemen had carried out these experiments with the aim of

studying the effects of anti-microbial serum injected in large doses into an area swarming with pathogenic micro-organisms.

Postscript, March the 20th.—The treatment of our second case had been started only a week before the above note was written, and appeared likely to result in complete recovery.

Subsequently, however, the ocular infection presented a relapse which required two more injections. This occurrence did not cause us extreme surprise or uneasiness. We often observe similar recrudescences in the suppuration of the meninges which we see yield to fresh intra-spinal injections of serum. The difficulties caused by the present state of affairs did not allow us to operate on the eye as soon as we should have liked, and if at the present moment the ocular infection appear definitely checked it is not yet possible for us to assert that recovery of vision will be complete. Whatever may be the final result, it will in no way invalidate what we have said as to the legitimacy and timeliness of the treatment which we have advocated.

Philadelphia Pediatric Society.

March the 9th, 1915. W. N. BRADLEY, President.

Removal of Tonsils by the Sluder Method.—Dr. RALPH BUTLER.—The technique consists in placing the aperture in the blade over the tonsil, scooping it out of its bed, and pulling it forward and upward until it lies over the alveolar eminence which serves to push it through the aperture. The tonsil is then slowly squeezed from its attachments and is completely removed with its capsule.

Less time and ether are required and there has been less secondary hæmorrhage than with other operations.

Disturbance of Pituitary Function.—Dr. CHARLES V. DORWARTH showed a girl, aged 4 years and 7 months, corresponding to group 3 of Cushing's classification, in whom skeletal growth indicated a perversion of the anterior lobe and excessive adiposity an insufficiency of the posterior lobe.

Vaginal Washings for Bacteriological Diagnosis.—Dr. DORWARTH.—Vaginal smears in cases with vaginal discharge often fail to show gonococci when these are present in vaginal washings. After cleaning the vulva with soap and water, a pipette containing 1 in 4000 perchloride solution in normal saline is introduced into the vagina, and by alternately emptying and filling the pipette the adherent secretion and superficial cells are detached and mixed with the solution, which is then placed in a test-tube and sent to the laboratory for examination.

Circumscribed Labyrinthitis.—Dr. G. M. COATES.—A boy, aged 13 years, with large tonsils and adenoids, who had had discharge from both ears for the last seven years, developed severe attacks of vertigo. There was no spontaneous nystagmus with the eyes at rest, but a rotation test caused nystagmus of 20 secs. for each side. Diffuse labyrinthitis was excluded by the amount of function preserved.

Bevan's Operation for Undescended Testicle.—Dr. JOHN H. JOPSON showed two successful cases. He had performed the operation in about twelve cases, and in only two was he unable to bring the testicle down into the scrotum. The operation was indicated in practically all cases of undescended testicle and should be done before puberty, but not as a rule before three years of age.

Renal Sarcoma.—Dr. GEORGE R. MÜLLER reported a case in a boy, aged 7 years. The symptoms were loss of weight and prominence of the abdomen, especially in its upper part, sleepiness, and headache.

An operation was performed about one year after the onset of the symptoms, and the kidney-mass, which was as large as a child's head, was removed. In April, 1915, symptoms of a possible recurrence were noted, consisting of loss of strength, slight fever, and enlargement of the mesenteric glands.

Fracture of Femur.—Dr. MÜLLER also showed a successfully treated case in a boy, aged 14 years.

Pneumococcic Meningitis.—Dr. MÜLLER also reported a case in a girl, aged 4 years, following a compound comminuted fracture of the skull in the right temporal region. Some improvement followed intraspinal injections of anti-pneumococcic serum, but death took place.

Extensive Fatal Thrush.—Dr. J. FRANK SCHAMBERG.—A breast-fed infant developed whitish patches in the mouth at the age of seven weeks. Ordinary treatment was useless, and the patches spread over the tongue, cheeks, palate, and pharynx. At the age of six months reddish scaly patches were present on the face, chin, and scalp, and there was an extensive eruption resembling eczema marginatum on the vulva, mons Veneris, thighs, perinæum, and buttocks. The mother's nipples showed a circular, slightly reddened, scaly eruption. A microscopical examination of the scales from the child's mouth, scalp, and genital region, and from the mother's nipples showed an enormous growth of mycelium and spores which microscopically and in cultures proved to be the *Saccharomyces albicans*.

Local treatment and vaccine therapy were unavailing.

The Schick Test.—Dr. JOHN A. KOLMER demonstrated the method. He laid special emphasis on the necessity of using a ripened toxin that had been properly titrated for its minimal lethal dose and the use of an accurately adjusted syringe and a fine needle. The injection must be made in the layers of the epidermis, and must leave an anæmic spot to show that the injection had been properly made. He uses $\frac{1}{40}$ of the minimal lethal dose for a 250 grm. guinea-pig so diluted with sterile normal salt solution that this amount is contained in 0.05 c.c. of fluid. The reactions are usually present within forty-eight hours of injection. An area of erythema more

than 5 mm. in diameter is regarded as positive. The test is of practical value in showing which persons require passive immunisation with anti-toxin when exposed to diphtheria.

Ringworm of the Scalp.—Dr. KOLMER and Dr. ALBERT STRICKLER showed a patient with ringworm of the scalp in whom an intradermal injection of the extract of the microsporon Audouini was followed in twenty-four hours by an area of erythema and slight œdema. In persons free of this disease the reaction was negative. They also demonstrated a reaction of less degree in the same patient following the intradermal injection of an extract of the fungus of favus. These anaphylactic reactions showed the biological relationship of the fungi of these two diseases, which the authors also found in the complement-fixation reactions.

Anaphylactic Reaction in Asthma.—Dr. KOLMER and Dr. S. McC. HAMILL also showed an anaphylactic reaction in a child suffering from asthma following the intradermal injection of a minute amount of egg albumin. In thirty-six hours after injection a large area of erythema developed. Since the withdrawal of eggs from the diet there had been no attacks of asthma.

Treatment of Otitis Media.—Dr. MATTHEW S. ERSNER had treated seventeen cases in children with vaccine.

The most prevalent bacteria found in discharging ears are staphylococcus, pyocyanus, pseudo-diphtheria bacillus, and streptococcus.

The reactions are—(1) Local: (a) At sight of injection slight swelling, areola, and increase of heat; (b) in ear, first increase of discharge followed by its diminution and cessation. (2) General: Rise of temperature. The doses used were streptococcus 25,000,000 to 50,000,000, staphylococcus 250,000,000, pyocyanus 500,000,000, pseudo-diphtheria 250,000,000. The result of treatment was as follows: Pyocyanus, 8 cases, 5 dry, 3 wet; staphylococcus, 7 cases, 4 dry, 3 wet; streptococcus, 1 case, dry; pyocyanus and pseudo-diphtheria, 1 case, dry.

Vaccine Treatment of Ringworm of the Scalp.—Dr. A. STRICKLER had cured seven patients by this method. The vaccine was prepared by growing infected hair previously soaked in absolute alcohol for twenty minutes, then washed with sterile water on "French-proof agar." After growing for twenty-four days at room-temperature, the growth was removed into a sterile mortar and ground up thoroughly with sufficient sodium chloride crystals to bring it up to normal salt solution. Ten c.c. of chloroform was then added and the vaccine heated for about one hour at 60° C. The vaccine was then tested both for live fungi and also ordinary bacteria.

Treatment consisted in injecting 1 to 2 c.c. of the vaccine every four days between the scapulæ.

Wassermann Reaction in the Routine Examination of 179 Children.—Dr. C. R. REINERS.—Ninety-three were positive and 156 negative. Of the former 8 had been diagnosed clinically, and in 15 syphilis had not been suspected, the diagnosis being broncho-pneumonia, enuresis, digestive disturbances, mitral endocarditis, enlarged tonsils, persistent thymus, acute rheumatic fever, etc.

APRIL THE 3RD, 1915. WILLIAM N. BRADLEY, M.D., President.

Hæmorrhagic Disease of the Newborn.—Dr. ALICE WELD TARRANT.—The patient was a male infant, weighing $8\frac{3}{4}$ lb. at birth. On the morning of the third day of life a hæmorrhagic area appeared under the skin of the neck and upper chest, extending up under the left ear. By night it had risen almost to the chin and under the right ear. A small hæmorrhage was seen on the roof of the mouth and a stool showed streaks of fresh blood. Temperature 103° F., pulse 168, respiration 52. The next morning the hæmorrhagic area was so swollen that the child lay with head far extended, and was cyanosed and dyspnoic from the pressure; the muscles of the limbs were rigid. Three petechiæ appeared on the back and one on the ankle, and there was slight oozing from the cord. Gelatin and adrenalin were administered for twenty-four hours with whisky as a stimulant. He was then given two-thirds of an ampoule of coagulose hypodermically and the rest of the ampoule next morning. Gradual improvement took place, and the child when seen at the age of 7 weeks was perfectly well.

Pellagra in Children.—Dr. WILLIAM DRAYTON, Junr., showed two cases who had always lived in Philadelphia. Both were girls about 11 years old. One was of Italian, the other of American parentage, and neither had been out of the city for more than a day or two at a time.

Both came under observation for difficulty in walking, the gait being ataxic and slightly spastic. Both showed roughness of the dorsum of the hands and similar skin changes about the eyes. In both the reflexes were increased, and there was slight corneal nystagmus. Wassermann reaction was negative in both.

The Thymus Gland in Health and Disease.—Dr. LE BOUTILLIER reported four cases:

(1) A case of status lymphaticus with a thymus weighing 65 gm., where death was due to pressure on the base of the heart and its ganglia.

(2) A case of tracheal stenosis due to an enlarged firm thymus weighing 29 gm., the specimen showing marked constriction of the trachea.

(3) A case of thymic asthma in a boy, aged $2\frac{1}{2}$ years, admitted to a fever hospital for laryngeal diphtheria on three different occasions, but with no evidence of diphtheria. X rays confirmed the diagnosis of enlarged thymus.

(4) Enlarged thymus associated with a simple goitre, X rays showing the condition.

Leucocyte Counts during Digestion in Bottle-fed Infants.—

Dr. A. GRAEME MITCHELL.—Comparatively little work has been done on this subject, but the opinion of the majority of writers may be summarised as follows: (1) In babies digestive leucocytosis is inconstant. (2) In adults digestive leucocytosis is inconstant. (3) A rise occurs in the early afternoon regardless of food. (4) Animals such as dogs, cats, and rabbits show a leucocytosis after food high in protein. (5) The majority of researchers think protein food to be necessary for the production, and a few think the whey and sugar content to be the cause.

Dr. Mitchell's report consisted of a study of fifty children in whom over 400 blood counts were made. A leucocyte count was made immediately

before feeding, immediately after feeding, fifteen minutes after, half an hour after, and so on every half hour till the next feeding.

His conclusions are as follows: (1) Bottle-fed babies do not constantly show digestive leucocytosis; in fact, the majority show a smaller number of leucocytes in the superficial blood after taking food than before. (2) This decrease is greatest at from one to two and a half hours after food, and tends to rise before the next feeding. (3) When a rise does occur it is most frequently soon after feeding, and begins to decline in a half hour. (4) Crying, struggling, and chilling of the part from which the blood is extracted increases the count. (5) There seems to be as yet no adequate explanation for the increase or decrease. (6) Comparative counts should be made at the same time of day, and at the same time in relation to food.

Abstracts from Current Literature.

Diseases of the Uro-genital System.

Nocturnal incontinence of urine in children (*Med. Journ. of Austral.*, 1915, 1, p. 377).—**T. W. Lipscomb** describes the condition as due to two causes: functional as a result of increased irritability of the bladder, or subnormal control of the sphincter, or both; and pathological, effected by hyperacidity or alkalinity of the urine, calculus, etc. *Treatment.*—Up to the age of 3 the child should be educated to retain his urine and to indicate when he desires to micturate. After 3 treatment is indicated; corporal punishment should be avoided, any peripheral exciting cause, as enlarged prepuce, thread-worms, etc., removed, and the bowels opened daily. The bedroom should be airy and the bedclothes light. The evening meal should be light with little fluid, and the child should not go to bed for an hour after tea. The child should sleep on the side with an empty cotton reel tied to the back. Belladonna and strychnine are the best drugs. The former should be given in 3 minim doses of the tincture, the last dose being given when the patients go to bed, and should be increased to 15 minims, and gradually reduced after the incontinence has ceased.

F. R. B. ATKINSON,

Postural albuminuria in childhood (*Arch. de Méd. des Enf.*, 1915, xviii, p. 461).—**L. Jeanneret**.—Hitherto two principal views have been held as to the pathogeny of this condition: (1) Jehle's view that it is due to lordosis only. (2) Langstein's view that it is orthostatic in origin. There are several less important schools who attribute it to tuberculosis, adenoids, or disturbance of the nervous or vascular systems. Jeanneret was led to regard Jehle's theory as too absolute, for the following reasons: (1) Like Langstein, Götzky, and others he had seen many children with a true fixed lordosis who had never had any albuminuria. (2) Numerous cases of spinal disease, with very marked compensatory lordosis, observed by Jeanneret, had never had any albuminuria. (3) He had never obtained albuminuria by performing Jehle's test (prolonged maximal lordosis with a bolster). Jeanneret

also found that the upright position alone was not the determining factor, as he had hardly ever found albuminuria in convalescents on allowing them to get up. In a girl, aged 13 years, he found that albuminuria could only be produced by the combination of three factors—lordosis, upright position, and immobility. Examination was then made of 204 children, aged from five months to fourteen years, with the following results: (1) Lordosis, as a rule, is not sufficient to produce albuminuria. Lordosis, by itself, gave rise to albuminuria in 3 per cent., and then only when the patient was left motionless. (2) Orthostasis alone caused albuminuria in only 1·3 per cent., and then only when the patient was kept motionless. (3) Lordosis and orthostasis, accompanied by movements of the leg, caused albuminuria in only 1·6 per cent. (4) The combination of the factors—lordosis, orthostasis, and immobility—caused albuminuria in 49 per cent. (5) Sex, age, and tuberculosis had no ætiological significance. Postural albuminuria is, therefore, not due to a single cause, but to the combination of several factors. This view reconciles the apparently conflicting theories of Jehle and Langstein. Jeanneret accepts Jehle's view that the albuminuria is due to venous stasis in the renal area. Unlike Jehle, however, he does not think that this congestion is due to lordosis alone, but to a combination of lordosis and immobility. The muscular contractions producing immobilisation in the lordotic position give rise to the venous stasis. Normally the child compensates by its movements for the obstruction produced by lordosis. The prophylaxis and cure for postural albuminuria consist in allowing the child freedom of movement.

J. D. ROLLESTON.

Purulent affections of the urinary passages in children (*La Pediatria*, 1914, xxii, pp. 561 and 646).—**S. Cannata** and **G. Caronia** record their experiences in the children's clinics at Palermo and Naples during 1912–1914. They found these affections common in infants, and more so in females and in hot weather. They are due to a variety of micro-organisms, the *B. coli* being by far the most frequent. Predisposing causes are the uric diathesis, tuberculous and syphilitic taint, phimosis, and other uro-genital malformations. Some cases are primary, others secondary. The authors consider that infection through the blood-stream is the most frequent and important, and admit the possibility of lymphatic infection, but find no evidence in favour of infection through the intestines. There is slight hyperæmia of the mucous membrane, characterised microscopically by a mild chronic inflammatory process of no great extent. Clinically, cystitis cannot be distinguished from pyelocystitis. In primary forms there is usually fever, sometimes with more or less severe and inconstant general symptoms and pallor. At the same time polyuria, painful micturition, and turbidity of urine make their appearance; these symptoms last in acute cases ten to twenty days, in subacute two to three months. Secondary forms appear during the primary disease and are characterised by aggravation of the general condition and of certain symptoms, such as fever, and by the onset of disturbances of micturition. The type of fever assumes various forms, the irregular intermittent predominating. The pallor noticed at the onset of the attack is a marked feature, and may persist after recovery. Dysuria from spasm of the vesical sphincter is frequent; there is polyuria, rarely retention, and sometimes enuresis. The urine is turbid, stains the linen, and has often a disagreeable odour. There may be also hæmaturia. The digestive system is affected; there may be anorexia and vomiting; diarrhœa is more frequent than constipation. Sometimes there is enlarge-

ment of the liver, with or without jaundice, and of the spleen. Affections of the respiratory system often precede those of the urinary passages, but the circulatory system is not often implicated, although there may be polynucleosis and sudanophilia. The nervous system shows more or less marked reaction. Among complications there may be septicæmia, but the most important is implication of the kidneys. Diagnosis depends on examination of the urine, and prognosis must be guarded owing to the possibility of the disease becoming chronic. Curative methods are many. The authors have not much faith in alkalisation of the urine, but prefer the administration of salol and hexamethyltetramine. Serotherapy and vaccine treatment play an important part in the treatment.

VINCENT DICKINSON.

Involvement of the urinary tract as a result of focal infections (*Journ. Amer. Med. Assoc.*, 1915, LXV, p. 312).—**C. G. Grulee and F. W. Gaarde** state that there is a form of acute hæmorrhagic nephritis occurring in children which usually follows six or seven days after an acute tonsillitis, and is accompanied by high rise in temperature and hæmaturia. In some cases the removal of a focus of infection is followed by immediate clearing up of the urinary findings. In many instances cultures from the blood and from the throat agree very well with the urinary cultures. Six cases are quoted, and a review of these shows that in every case the acute attack of hæmaturia followed some infection of the nasopharynx or tonsil. In two of these cases recovery was almost immediate, following, in the one instance, the removal of the tonsil, and, in the other, the drainage of the mastoid. In two cases the culture from the urine was negative; in both of these the culture was made several days after the onset of the condition. In two of the other cases the *Staphylococcus albus* was found, one a streptococcus producing slight hæmolysis, and in the other a *Staphylococcus albus* and a *Streptococcus hæmolyticus*. The blood culture in one instance showed an organism similar to that found in the urine. When taken, the organisms obtained on the cultures from the throat showed a great similarity to those obtained in the urine. It is significant that five of these cases occur in boys, varying in age from two to six years. As to the clinical picture, the following may be said: With the exception of one case the tonsillitis which preceded the condition had practically subsided before the appearance of the hæmaturia. With the exception of this case, the tonsillitis preceded the hæmaturia six or seven days. The hæmaturia came on suddenly and was accompanied by albumin and casts. In general, it showed a tendency to rapid remission, so that within two or three weeks the urine was clear. There seemed to be a tendency for the leucocytes in the urine to increase in number with the disappearance of the red cells, which in turn disappeared. The temperature was high and irregular in the acute stages, coming to normal with the disappearance of the urinary findings. There was practically no disturbance of the general condition of the patient, the amount of prostration being surprisingly slight. There was no œdema in any of these cases, except for a very slight swelling of the eyelids in the case which followed the mastoid involvement. In none of the cases was there a history of the giving of drugs, such as hexamethylenamine, which might produce temporary hæmaturia. The blood showed a very slight anæmia in all cases, the reduction in the hæmoglobin of the red cells being so slight as to be negligible. In all cases there was a distinct leucocytosis of the polymorphonuclear variety. This varied between 15,000 and 30,000. The authors differentiate these cases

from acute hæmorrhagic nephritis following scarlet fever, and doubt whether urinary antiseptics were of much avail in treatment.

T. R. WHIPHAM.

Renal infantilism (*'Arch. of Ped.,'* 1915, xxxii, p. 85).—**Langley Porter** records two cases of retarded growth due to organic renal disease. The symptoms were of the usual type—infantalism with polyuria and polydipsia. In one case the heart showed enlargement and a bruit, the condition being thought to be congenital. The second case was admitted to hospital moribund and died of uræmia the next day. The child was aged 6 years and 4 months. There was no autopsy.

REGINALD MILLER.

A case of rupture of the left kidney with partial laceration and evulsion of the healthy spleen (*'Journ. de Méd. de Bordeaux,'* 1914, lxxxv, p. 389).—**R. Lataste**.—This condition was due to a fall of 9 ft. The child died and post-mortem examination revealed the above conditions.

F. R. B. ATKINSON.

Rupture of the prostatic urethra (*'Med. Record,'* 1915, lxxxvii, p. 776).—**S. W. Schapira**.—A boy, aged 14 years, was run over by a motor car and admitted to hospital with distension and ecchymosis of the abdomen, and infiltration and ecchymosis of the penis, perineum, and scrotum. A diagnosis of ruptured bladder was made. On suprapubic incision the prostatic urethra was severed entirely from the bladder, and the pubic bones were separated, the left being at least an inch below the right. A week after the operation a soft rubber catheter was introduced into the bladder per urethram and was retained for two weeks. Sounds were then passed for three months. Five months after the accident the patient returned to hospital complaining of frequency of micturition and small stream. On perineal section a hard fibrous ring was removed from the prostatic urethra. A catheter was kept in the bladder for twelve days. The author concludes that approximation of the torn end of the urethra is unnecessary so long as adequate drainage is provided. Stricture, however, may supervene months after the injury.

CHRISTOPHER ROLLESTON.

An unusual case of masturbation (*'Med. Record,'* 1915, lxxxviii, p. 608).—**J. A. Gilbert**.—A boy, aged 10 years, had masturbated ever since he was two and a half years old. The habit was not confined to the night, but was resorted to as often as opportunity allowed during the day. All methods that parents and doctors could devise were unavailing. Cats, dogs, boys and girls were used for the gratification of the habit whenever opportunity allowed. He was worse after circumcision than before owing to the local irritation serving as a stimulus. At the request of the parents, who feared he might impregnate some girl when he reached puberty, castration was performed, and he was admitted to a school for the feeble-minded. Though not perfectly normal mentally he was far above the average class of boys of his age in the school. The habit gradually disappeared in the course of the three years following castration.

J. D. ROLLESTON.

Gonorrhœa in male children (*'Boston Med. and Surg. Journ.,'* 1914, clxxi, p. 351).—**W. D. Bieberbach**.—A boy, aged 6 years, showed considerable narrowing of the preputial orifice and a copious offensive discharge at the margin of the prepuce. A diagnosis of phimosis was made, the cause

being balanoposthitis due to a long, tight foreskin. Circumcision was performed next day. A few hours after the operation the patient was unable to pass urine. The meatus was then found to be swollen, and on separating the lips, which had been glued together, there was a free discharge of pus, examination of which showed gonococci. A younger brother, aged 3 years, showed the same condition. Their sexual organs were much larger than those of the average child of the same age. No confession could be obtained, but they had probably been infected by their sister, aged 13 years, with whom they occupied the same bed. She in turn had been violated and infected by her step-brother, aged 18 years. In addition to the ordinary prophylactic treatment the children were placed on a non-stimulating diet. The boy aged 3 years was given 10 drops of thyresol daily, and the boy of 6 years 15 drops. Both had their anterior urethra irrigated every other day with protargol, starting with a solution of 1 in 8000 and gradually increased up to 1 in 4000. At the end of the second week the discharge was very slight and contained few gonococci. Instillations were then substituted. At the end of the fourth week the discharge had entirely ceased. All treatment was then stopped, and the children were kept under observation for two weeks, when they were discharged as cured.

J. D. ROLLESTON.

On the frequency and prognosis of rectal gonorrhœa in the vulvo-vaginitis of children (*Arch. f. Kinderheilk.*, 1914, cxx, p. 177).

—D. Wolfenstein, in twenty-six cases of gonorrhœal vulvo-vaginitis in children, found rectal gonorrhœa in fourteen, or 54 per cent. Owing to the danger of re-infection of the vulva and vagina, rectal gonorrhœa should be treated with silver salts in the same way as the vagina or urethra. The prognosis of vulvo-vaginitis and rectal gonorrhœa is favourable according to the writer's experience.

J. D. ROLLESTON.

The prevention and treatment of vulvo-vaginitis in children (*Amer. Journ. Med. Sci.*, 1914, cxlviii, p. 480).—F. J. Taussig reports

on sixty-six cases of vulvo-vaginitis in children varying in age from 3 weeks to 12 years. In all but three cases gonococci were found in the discharge. No case in which sexual contact could be excluded occurred after puberty, a fact which is explained by the protection of the vaginal orifice by the growth of the labia vagina and pubic hair. As regards the origin of infection, there was no evidence of rape in any case, and in only two instances was gonorrhœa found in the mother. The author regards the seat of the common lavatory as the most frequent source of contagion. As regards treatment, the author recommends instillation by means of a rubber tipped urethral syringe pressed tightly over the orifice in preference to the vaginal douche, which fails to distend the folds of mucous membrane. For the first two weeks (in girls of school age) 25 per cent. argyrol was used twice daily; in the third and fourth weeks, 1 per cent. silver nitrate daily; in the fifth and sixth weeks, 2 per cent. silver nitrate every other day; in the seventh to tenth week, 4 per cent. silver nitrate once or twice a week. The lactic acid bacillus treatment was tried with doubtful results, and the author is not in favour of vaccines for gonorrhœa of the mucous membranes. As regards prognosis, it is difficult to say when a case is cured, even by means of the complement-fixation test, but with active treatment 75 per cent. should be cured in three or four months. In the author's cases complications were rare; there was one case of possible salpingitis, two of ophthalmia, and one

with arthritis. As measures for prophylaxis the author recommends: (1) The instillation of a drop of 2 per cent. silver nitrate solution in the vagina of all newborn girls whose mothers show evidence of gonorrhœa; (2) notification of the disease; (3) instruction of parents in preventive measures to limit infection; (4) investigation of the probable origin of contagion by a visiting nurse; (5) the adoption of a V-shaped lavatory seat in the lavatories of schools and tenement houses. C. F. MARSHALL.

Vesico-vaginal fistula in a child aged 8 years: spontaneous cure following removal of a hair-pin (*Am. Journ. Obst.*, 1914, LXIX, p. 1075).—I. C. Rubin narrates this case. F. R. B. ATKINSON.

Ophthalmology.

Ophthalmia neonatorum (*New York Med. Journ.*, 1915, CI, p. 1159).—**De Forest**.—The eye should be washed out every hour with a saturated solution of boric acid, dropped from saturated cotton-wool. In bad cases one or two drops of 2 per cent. nitrate may be instilled once daily. No bandage should be used; but the unaffected eye should be covered with a watchglass fastened on as a shield for protection against infection. The writer does not approve of the use of a syringe, as the eye may be injured, either by a too vigorous stream of lotion or by the syringe itself. Ice compresses, continually changed, should be begun at once.

J. PORTER PARKINSON.

A case of arthritis associated with ophthalmia neonatorum (*Med. Journ. of Austral.*, 1915, II, p. 142).—**H. Laurie** was called to see a baby ten days old suffering from gonorrhœal ophthalmia and swollen left wrist and right ankle. At the end of three weeks from birth the joints were normal and the conjunctivæ had ceased to discharge as a result of treatment. F. R. B. ATKINSON.

Hereditary aniridia (*Journ. Amer. Med. Assoc.*, 1915, LXIV, p. 1310).—**S. D. Risley** gives an account of a case of aniridia with a history of the condition persisting through four generations. T. R. WHIPHAM.

Blue sclerotics associated with brittle bones (*Amer. Journ. Dis. Child.*, 1915, IX, p. 205).—**C. Herrmann** and **P. H. Fridenberg** record a case in a boy, aged 2 years. No other member of the family had blue sclerotics or brittle bones. At 18 months he fell from an ordinary chair and fractured his right tibia, and six weeks later his right femur while still in bed with his leg in a cast. A skiagram of the right femur and tibia showed that they were more transparent than normal, especially towards the proximal end of the tibia; the epiphyseal ends were broadened and showed distinct lack of cortical substance. The muscles and ligaments also showed the same lack of density. A skiagram of the arm showed very little change from normal. The colour of the sclerotic was of a uniform china blue; otherwise there was no ocular abnormality. The vision seemed acute. The iris was of a leaden-grey colour, and the fundus very blond. The discs were

normal. Fridenberg attributed the transparency not only of the sclera and iris, but also of the bones, muscles, and ligaments, to an absence of lime salts in the connective tissue of nerve structures rather than to a lack of fibrous tissue.

J. D. ROLLESTON.

A case of lacrymal adenitis (*Med. Journ. of Austral.*, 1915, II, p. 122).—**E. Joffrey** describes this condition in a child, 7 years of age. The swelling of the gland disappeared by treatment with fomentations and argyrol.

F. R. B. ATKINSON.

Panophthalmia occurring during pneumonia (*Med. Record*, 1915, LXXXVII, p. 813).—**R. L. Pitfield**.—A girl, aged 13 years, was admitted with the symptoms of meningitis and with a history of recent apical pneumonia, and old rheumatism and chorea, confirmed by the presence of a double mitral murmur and thrill. A leucocytosis up to 33,000 was present. The cerebro-spinal fluid contained pneumococci. On the eleventh day after admission the corneæ became hazy, the fluid in the anterior chambers was milky, and exudative choroiditis was present. The right lung re-consolidated throughout its whole extent, and delirium set in. Three days later the eyelids became cedematous, and pneumococci were found in the pus of the conjunctival sac. Argyrol dionin, boric acid, and atropine were all tried without success. Death took place on the sixteenth day after admission.

CHRISTOPHER ROLLESTON.

Some ocular complications of mumps (*Bull. et mém. Soc. méd. Hôp. de Paris*, 1915, XXXIX, p. 610).—**F. Ramond** and **G. Goubert**.—Among 115 soldiers suffering from mumps, 45 presented the following ocular complications: Lacrymation, conjunctivitis, chiefly bulbar and of variable intensity, disturbance of vision ranging from a mere impression of haziness to an inability to read a line of a newspaper. There was only one case of dacryoadenitis. Examination of the fundus was made in the sixteen cases who complained of disturbance of vision. All showed a marked accentuation of the normal red coloration of the papilla, or a vagueness in its outline, or an appreciable swelling of the retinal veins. In one case congestion of the iris was associated with a turbidity of the fluid in the anterior chamber. These various changes were transitory, and disappeared entirely as the parotitis subsided. In one case, however, the retinal lesion was more marked and persisted for a month after recovery from mumps. None of the patients had albuminuria in the course of their disease.

J. D. ROLLESTON.

A case of paresis of accommodation after diphtheritic vulvo-vaginitis (*Klin. Monatsbl. f. Augenheilk.*, 1915, LIII, p. 427).—**R. Pape**.—A girl, aged 12 years, developed paresis of accommodation six weeks after an attack of vulvo-vaginitis. Recovery took place in a few weeks under toxin treatment. No mention is made of a bacteriological examination.

J. D. ROLLESTON.

Paralysis of the eye muscles by trichocephali and oxyurides (*Rev. méd. de la Suisse rom.*, 1915, XXXV, p. 167).—**A. Dufour** records two cases. (1) A girl, aged 10 years, suddenly complained of diplopia and headache. Examination showed paresis of the left superior oblique and impairment of general nutrition. After treatment with tonics and deriva-

tives the paresis disappeared, but three weeks later she developed successively paresis of the right inferior oblique, left external rectus, right inferior rectus, and complete paralysis of the right external rectus. The nose and throat were normal and hysteria could be excluded, but a large number of trichocephalus eggs were found in the fæces. In spite of treatment with various anthelmintics, the stools and ocular movements did not become normal for fifteen months. The following year the child developed bilateral paresis of accommodation, which on this occasion was due to oxyurides. (2) A girl, aged 11 years, suddenly developed paresis of the superior and inferior oblique and almost complete paralysis of the right external rectus. There were numerous trichocephali in the stools. After treatment with thymol, castor oil, and santolin the worms disappeared, but the diplopia persisted for another month. J. D. ROLLESTON.

Eye symptoms in Kaposi's disease ('*Lancet*,' 1915, I, p. 979).—**F. Richardson Cross** read before the Ophthalmological Society of the United Kingdom a paper on "Eye Symptoms in Kaposi's Disease (Xeroderma Pigmentosum)." In a general review of the disease he stated that spots like freckles appeared in the first year or two of life and were often precursors of the grave skin disease described by Kaposi in 1870, accompanied by dryness and atrophy of the skin, and other serious changes. Frequently more than one member of a family were affected. The prognosis was very gloomy; early death might occur from deep ulceration towards the brain or other vital parts; or from exhaustion or hæmorrhage. The muco-cutaneous surfaces, such as the eyelids, became thinned, shrunken, and fissured with superficial ulcers; and the eyeball might participate in any phase of the disease, and warts might occur on the lid edges. The ocular conjunctiva was usually hyperæmic. Some cases showed pterygium, and the cornea became hazy from infiltration of its substance or from swelling of the epithelium. Ectropion was frequently present, leading to opacity or ulcer of cornea. But in many cases the eyes were open and light was well tolerated. The optic nerve and intra-ocular structures were affected only late, if at all. Massage of the eyeball, especially by the use of calomel ointment, served to empty the superficial blood-vessels. Whitfield had much improved one such case by applying X rays. During the past year the author had had under observation two cases of Kaposi's disease, brother and sister, aged 11 and 9½ years. The parents (cousins) were healthy. The boy was born in Ceylon, and when coming to England at nine months old he became very sunburnt in the Red Sea, his skin becoming scarlet. Later the face, neck, and shoulders were dotted with yellowish-brown pigment spots, and the skin became thin and shrunken. The girl was born in England and arrived at Ceylon when a few months old; in her voyage she did not encounter excessive sun-glare. At nine months of age her skin also became bad, and a little later a small nodule appeared on the cheek, but fell off, leaving no scar. She had implication of the eyelids, causing eversion. When four years old the boy had a troublesome papule on the eye, for which he was treated by Sir John Tweedy. At that date there was subconjunctival ecchymosis at the outer side, and at the inner side of the globe, between the cornea and the caruncle, a truncated conical swelling with some ecchymosis and conjunctivitis. There was so much photophobia that a satisfactory view could not be obtained. On the following day, under a general anæsthetic, he examined the eye and found an indolent swelling in the conjunctiva and episclera at the inner side of the globe. He scraped it with a sharp spoon

and applied powdered salicylic acid and ordered the eye to be washed two or three times a day with a solution of salicylate of sodium. The eye gradually improved until the seat of the swelling presented the appearance of a small phlycten. Eighteen months later, when Sir John Tweedy next saw the case, the eyes were much stronger and were rarely inflamed. Two and a quarter years later the patient saw J. 2 with correcting glasses. When the author saw the boy twelve months ago he had much photophobia, both winter and summer, and when in the light he was constantly sneezing. He found it difficult to read. Under chloroform there was found to be a dull hyperæmia of the eyeballs and two small phlyctenular swellings were also noted. The corneæ were somewhat glassy; the pupils were small, but reacted to light and opened freely to homatropine. A few days later he saw $\frac{6}{18}$ for a moment and J. 6. Improvement was reported after massage of the eye with calomel ointment. In November there was acute inflammation of the right eye and a fine infiltration running across the cornea. There were also a haziness of the left cornea and a marginal spot looking like pterygium. The conjunctival growth removed from the eye of the boy consisted almost entirely of epithelial cells, mainly prickly cells, and showed evidence of commencing malignancy.

J. ALLAN.

Apparent accommodation with aphakia (*Lancet*, 1915, I, p. 980).—**Treacher Collins**, at the Ophthalmological Society of the United Kingdom, described the case of a boy who had lamellar cataracts removed from his eyes when 7 years old by repeated discission operations. When he was 14 it was discovered that he was using only one pair of glasses for both distance and reading. On testing his sight it was found that he saw right with + 13, $\frac{6}{6}$; left with + 13, $\frac{6}{6}$; and with the same glasses in the same position on his nose, looking straight through the centre of them, he read J. 1 fluently. Any alteration in curvature of the cornea while he adapted his eye for the near point was excluded by examination with the ophthalmometer and by the use of Batten's eye-bath. Any lengthening of the antero-posterior axis of the globe was watched for by ophthalmoscopic examination. He could see just the same when the eyelids were held away from contact with the globe. When the pupils were semidilated with cocaine he could still read J. 1 with + 13 in ordinary daylight with the right, but only J. 2 with the left. When the pupils were fully dilated with atropine he could only read J. 10 with + 13 in ordinary daylight, but in the dark room with a strong light concentrated on the test-type he still read J. 1 better with the right eye than with the left. When examined with the pupils well dilated it was seen that in the right eye there was a membrane with a sharply defined central circular aperture in it, 35 mm. in diameter. In the left eye the aperture was larger and more oval in shape; the membrane in it, moreover, did not occupy the entire pupillary area, a space being left at the circumference between it and the pupillary margin. Both pupils were regular, free from any adhesions, and acted very briskly to light. The author considered that the evidence he had collected in connection with this case went to show that there was not any true accommodation; that the boy's power of seeing clearly at different distances was due to the cutting off of circles of diffusion, partly by contraction of the pupils, but mainly by the small central openings in the membranes. He quoted several other cases which had been recorded, in which apparent accommodation was present after the removal of the lens, and advocated trying to adopt the technique in operations for soft cataract so as to produce a condition similar to that in the case described.

J. ALLAN.

The present status of squint and ocular motor imbalance (*New York State Journ. Med.*, xv, 1915, p. 57).—**H. W. Wootton** briefly considers current opinion regarding concomitant strabismus and latent muscular errors. Dealing first with concomitant strabismus he asserts that the importance of refractive errors in the etiology of these deviations is fully recognised. Regarding the amblyopia his view is that this is congenital and is a primary factor in the etiology of most cases of strabismus. He does not agree with Worth and his investigation of the fusion sense, and for this reason the author has little faith in the treatment of squint by stereoscopic exercises. The value and limitations of operative treatment are next discussed, and the technique of various operative measures is considered. Regarding latent anomalies he thinks that, while their importance was at first over-estimated, a certain limited number of these anomalies do occasion symptoms apart from the refractive errors with which they are for the most part associated, and that they do at times require treatment directed to their relief.

J. ALLAN.

Retinitis pigmentosa (*Lancet*, 1915, i, p. 928).—**M. S. Mayou** read before the Ophthalmological Society of the United Kingdom a paper on retinitis pigmentosa treated by trephining, the improvement following which had been maintained for four and a half months, in the hope that some light might be thrown on the etiology of a little understood disease. In this condition anything which improved the retinal circulation would temporarily benefit vision—such as amyl nitrite or paracentesis of the anterior chamber. Doyne had shown that extraction of the lens was followed by immense improvement in vision, due, it was considered, to the fact that the patient was always in a condition of semi-daylight owing to the cataract, so that the retina did not receive sufficient stimulation. Mayou, while not denying this, thought that the lowering of the intra-ocular tension, with the consequent flushing of retinal vessels, and the filtration of fluid through the scar, might be an additional factor, possibly the most important one, in the good result. He thought trephining would result in the retinal vessels being flushed with blood, and that the subsequent leakage might lead to a more rapid excretion of fluid from the eye and drain away any toxic products which might be causing local vascular sclerosis. The patient was a female, aged 17 years, who for two years had complained of night-blindness. Grandfather, father, one paternal aunt, and one brother were all affected with the same disease. The four sisters of the patient were not night-blind. She showed marked pigmentation of the periphery, the discs being slightly grey in colour and the vessels of practically normal size. The lenses were clear. When first examined the fields were contracted to a 10° circle on both sides. On November 13 last, and again on December 1, paracentesis of the left eye was performed, and on each occasion there was distinct improvement in the fields. On December 8 trephining was done under general anaesthesia. On removing the disc of sclera there was a very free prolapse of iris, which was slightly caught in the wound; recovery was otherwise uneventful. A week later the field on this side had practically reverted to normal, and she could walk about freely in a darkened room. Improvement was maintained to the present date. On covering the unoperated eye she could see well at night-time, but if both eyes were open she was still somewhat night-blind. He could not advance any explanation of this. The improvement could not be expected to last very long, but it might continue for a length of time which justified the operation in selected cases.

J. ALLAN.

Lymphangioma of the orbit with hæmorrhage (*'Lancet,'* 1915, I, p. 929).—**G. Mackay.**—The patient was seen first in 1906, being then 15 months old. Paracentesis and, later, excision so far as practicable having failed to eradicate the growth from the apex of the orbit, X-ray treatment had been employed, and with much benefit. Owing to the irregularity in the patient's attendance, proptosis had been allowed to recur at intervals of one to three years, but had always yielded to further X-ray applications. The cure now appeared to be complete, and vision and movements were unimpaired.

J. ALLAN.

Bilateral glioma of the retina (*'Amer. Journ. Dis. Child.,'* 1915, IX, p. 485).—**H. F. Hansell** reviews the literature and reports a case in a boy, aged 2 years. There was no family history of cancer or other forms of tumour, or of congenital affections of the eye. The disease was most advanced in the left eye, which was enucleated, and Hansell proposed to remove the right as soon as vision in it was lost. Examination of the excised eyeball after hardening showed an irregular, greyish, soft tumour in the vitreous apparently arising near the entrance of the optic nerve and extending into the vitreous to within a few millimetres of the lens. The retina appeared intact. Histologically the tumour was found to arise from the granular layers of the retina and to be made up of numerous small round cells with deeply staining nuclei, lying in a network of neuroglia fibres. The blood-vessels, with well-formed walls and filled with red cells, appeared directly among the cellular elements. The optic nerve was not involved.

J. D. ROLLESTON.

Angiosarcoma of retina (*'Med. Press,'* 1915, I, p. 488).—**C. Walker.**—The patient, aged 4 years, was seen on November 11, 1914. Eight months before there was said to have been a film over the right eye; no pain or redness. It disappeared in about six weeks. In June and September there was some pain in the eye, but the boy had regularly attended school to the end of October. The right eye was seen to be the seat of a brownish-yellow hypopyon. There was no ophthalmoscopic reflex; the tension was normal, and the pupil dilated well with atropine. There was doubtful perception of light. The left eye was normal, and the patient's general condition good. Ten days later the eyes became red and tender, and there was some continuous pain; the tension was plus 1. The contents of the anterior chamber were evacuated, and Prof. Walker Hall reported that the material was probably sarcomatous. The eye was accordingly excised and submitted to the same authority. Early in December some $\frac{3}{4}$ in. of the stump of the optic nerve was removed, with a mass of tissues surrounding it. Pathological examination showed that recurrence had commenced in the stump of the nerve and the surrounding tissues, but there was a small margin of healthy tissue. Recurrence took place within a fortnight of the second operation. The boy's mental condition was not affected, and there had been no metastasis. The specimen showed that the ciliary region was not invaded.

J. ALLAN.

Reviews.

SIMPLIFIED INFANT FEEDING; WITH SEVENTY-FIVE ILLUSTRATIVE CASES.
By ROGER H. DUNNETT, B.S., M.D. With 14 illustrations. Philadelphia and London: J. B. Lippincott & Co. Pp. 345. Price 12s. 6d. net.

THE title of this work, "Simplified Infant Feeding," indicates the author's aim. It is an attractive title, perhaps too well calculated to rouse expectations in the mind of the prospective purchaser. It is true that reflection will show that the purpose of any author, writing for busy practitioners, who undertakes to discuss so vast a subject in a volume of some three hundred pages, is to present the matter in as simple and definite a way as is compatible with truth. In his preface, however, Dr. Dunnett seems to indicate that his attempt at simplification goes somewhat further than this. He says that "theory" has been left out of this book as much as it has been possible to do so, using facts and rules where they can be made to apply; and although he admits that individual peculiarities do occur among infants, he claims that "the chief fact remains that most excellent results have been obtained in following out the system described in this book." We think that Dr. Dunnett has succeeded very well in compressing into these pages a large amount of interesting information, and that, on the whole, his directions are wise and temperate. Nevertheless, we doubt if the author is right in his contention that it is possible altogether to discard what he calls "theory," or wise to attempt to do so. It is not easy to conceive that he will be successful in giving precise directions as to dietetic modification for every individual symptom, or for the innumerable combinations of symptoms which may be met with. Yet this is attempted again and again. To quote an example of the method in which the subject is presented. Under the heading "diarrhœa in bottle-fed infants," he describes three main groups, each subdivided into four or five smaller ones, some of which are again subdivided. The three main divisions of this catalogue are headed "intestinal indigestion," "infectious diarrhœa," and "miscellaneous," and the first item in each of these three divisions are designated simple indigestion (sugar), fermentative diarrhœa (sugar diarrhœa), and sugar intoxication respectively.

We doubt if such a method of presenting his subject can appeal, as the author states that he wishes it to appeal, to the busy practitioner. Surely it would have been better to have had recourse to some general statement of the part played by sugar in the nutrition of the infant and in causing intestinal derangements. We believe that the educated medical man, just because he is busy, prefers to grasp a principle rather than to move in blind submission to a system, the details of which become as complicated as the rules of a Latin grammar.

Although we think that the author has handicapped himself by his resolution to avoid all theoretical discussion and argument, the book is very far from being without a value of its own. It is well written and adopts a sensible and well-defined attitude on all important matters. Its strong points are the minuteness and care of its practical directions, and some of

the later chapters, when it seems to us that the author allows himself to forget a little the restrictions he has imposed upon himself and to which we have referred, are of very high value. The chapter devoted to the consideration of the vexed question of the merits of boiled and unboiled milk is especially good. The photographs illustrating the facial expression of infants suffering from different disorders are better than any we have seen. The directions for feeding are accompanied by full notes of seventy-five typical cases.

H. C. C.

THE INDIVIDUAL DELINQUENT: A TEXT-BOOK OF DIAGNOSIS AND PROGNOSIS FOR ALL CONCERNED IN UNDERSTANDING OFFENDERS. By WILLIAM HEALY, B.A., M.D. Pp. 830. London: Heinemann. Price 21s. net.

ALTHOUGH this book purports to deal with the subject of criminology in general, its main concern is with juvenile delinquency. This is probably due to two considerations: A personal one, that the author has had his attention specially directed to this aspect of criminology through having spent the last five years as Director of the Psychopathic Institute at the Juvenile Court, Chicago; the other a wider one, namely, that anyone who, like the author, makes a scientific study of criminology must soon see that the main problems, particularly the all-important ones of genesis, relate to childhood and its development.

The volume is divided into two books. In the first, entitled "General Data," there are four preliminary chapters, then four on "working methods" and statistics, with two on general conclusions as to treatment. The methods of investigation described are specially dealt with, and this section is exceedingly valuable. The second book, entitled "Cases, Types, Causative Factors," comprises the larger part of the whole volume. The questions of heredity, antenatal and natal factors, and physical abnormalities in development are first discussed. Then follow a number of chapters on psychological factors, environmental and intrinsic; the subject of mental conflicts and "repressions" are considered at length, special stress being laid on the all-important matter of sexual development and experiences. There are several chapters on the various kinds of mental deficiency and inferiority, ranging from dulness to actual idiocy. The influence of epilepsy and alcoholism is discussed, and an interesting account given of special mental peculiarities, such as pathological lying, love of excitement, abnormal social suggestibility, etc. An imposing bibliography and a full index conclude the volume.

The book is one of a series dealing with different aspects of criminology, and it is quite one of the best of the series. It will, indeed, easily take rank as one of the few works on the subject that really count. The author's enthusiasm, erudition, and level judgment are stamped on every page. His views, though very sympathetic, err, if at all, on the conservative side, and his special talents are rather social than psychological. But, as the reviewer knows from first-hand experience, he has been at the centre of the band of devoted workers that in the past few years have revolutionised the treatment of juvenile delinquents in Chicago, and his influence has radiated over the whole of the United States. A work of this extent from his hand, therefore, is one that will necessarily arouse the strongest interest on the part of all those who have to deal with such problems.

ERNEST JONES.